

## THE CLAY, BUILDING MATERIALS AND BUILDING TRADES

### GENERAL REPORT

The following report summarises in comparable form the principal results of the Censuses of 1930 and 1924 for the clay, building materials and building group of trades, of which detailed particulars are given in the succeeding reports on individual trades. The particulars in this report relate to the United Kingdom except where otherwise specified, and are confined to production carried out by private firms.

#### Principal results

The main particulars obtained for 1930 and 1924 are set out in the following table:—

Trade		Gross output (selling value of goods made and value of work done)	Cost of materials used and amount paid for work given out	Net output (excess of Col. (2) over Col. (3))	Average number of persons employed	Net output per person employed	Power available*
(1)		(2)	(3)	(4)	(5)	(6)	(7)
		£'000	£'000	£'000	No.	£	Th. H.P.
1 Brick and Fireclay	1930	20,968	6,136	14,832	73,321	202	201.4
	1924	20,703	6,419	14,284	68,474	209	159.7
2 China and Earthenware	1930	14,624	5,086	9,538	70,007	136	48.9
	1924	17,500	6,637	10,863	69,546	156	44.2
3 Glass ... ..	1930	13,713	5,420	8,293	39,571	210	71.1
	1924	12,980	4,975	8,005	36,891	217	48.6
4 Cement ... ..	1930	8,420	3,562	4,858	11,604	419	195.2
	1924	8,031	3,429	4,602	13,495	341	116.5
5 Building Materials	1930	14,075	6,495	7,580	30,013	253	59.1
	1924	9,686	3,870	5,816	20,542	283	34.0
Building and Contracting ...	1930	194,288	100,223	94,065	453,807	207	223.3
	1924	162,725	82,131	80,594	419,053	192	176.9
TOTAL—UNITED KINGDOM ...	1930	266,088	126,922	139,166	678,323	205	799.0
	1924	231,625	107,461	124,164	628,001	198	579.9
England and Wales†	1930	244,003	116,567	127,436	613,250	208	725.4
	1924	211,266	98,029	113,237	568,934	199	528.5
Scotland† ...	1930	18,514	8,640	9,874	54,274	182	60.6
	1924	17,086	7,832	9,254	49,193	188	42.8
Northern Ireland	1930	3,571	1,715	1,856	10,799	172	13.0
	1924	3,273	1,600	1,673	9,874	169	8.6

\* Total capacity of prime movers and of electric motors driven by purchased electricity.

† Owing to the possible disclosure of information relating to individual firms, particulars in respect of the Cement Trade for Scotland have been included with those for England and Wales.

**Comparability of results.**—The 1930 employment figure for the Cement Trade is understated in relation to that for 1924, owing



to the fact that particulars relating to the quarries and workings owned by cement manufacturers were included in the Mines and Quarries group at the 1930 Census, whereas at the previous Census combined returns covering both the quarries and the cement works were made on the schedule for the Cement Trade. The number of persons employed in 1930 at the quarries concerned was 2,275 and to this extent the employment figures shown for 1930 for the Cement Trade and for the whole group are understated as compared with those for 1924. As explained on page 153, this change of practice also resulted in a slight overstatement of the cost of materials (with a corresponding understatement of the net output) shown for the Cement Trade and for the group as a whole.

A number of electrical contracting firms that made returns on schedules for the Electrical Engineering Trade at the 1924 Census were assigned to the Building and Contracting Trade at that of 1930, while certain road contractors that made returns on schedules for the Building and Contracting Trade at the 1924 Census were assigned to the Building Materials Trade for the later year. The net effect of these two changes on the general results for the Building and Contracting Trade and for the group as a whole is negligible, but the second led to an overstatement of the 1930 aggregates for the Building Materials Trade, as compared with those for 1924, in respect of establishments employing about 2,000 persons.

#### Deficiencies due to the exclusion of small firms in Great Britain.

—The report on each trade contains a section setting out the numbers of persons reported to have been employed in 1930 and 1924 by firms employing not more than ten persons, with details of the chief classes of goods made and work done in the earlier year. The number of firms that gave no information at the two Censuses is also stated.

The following table shows the numbers of persons reported as employed by the small firms and the number of outstanding returns in respect of each trade:—

Trade	Persons employed in Great Britain by				Firms furnishing no particulars	
	1930		1924		1930	1924
	Firms with more than ten employees	Firms with not more than ten employees	Firms with more than ten employees	Firms with not more than ten employees		
No.	No.	No.	No.	No.	No.	
Brick and Fireclay...	72,434	2,973	67,653	1,850	76	80
China and Earthenware ...	69,873	898	69,402	462	22	40
Glass ...	39,571	1,650	36,849	890	42	80
Cement ...	11,377	219	13,278	95	3	—
Building Materials	29,731	9,160	20,307	5,003	269	450
Building and Contracting ...	444,538	154,341	410,638	95,343	3,950	13,000
TOTAL ...	667,524	169,241	618,127	103,643	4,362	13,650

The above table shows that the smaller firms are found chiefly in the Building Materials Trade and in the Building and Contracting Trade, in each of which they employed roughly one-fourth of the total number of persons reported by all firms for 1930. In the remaining four trades taken together less than 3 per cent. of the total number of employees was recorded by the small firms. So far as returns were furnished by the smaller firms, the group aggregate for 1930 shows an increase of about 63 per cent. over that for 1924 but comparison between the two aggregates is affected by the number of firms that failed to furnish particulars; it will be noted that this number was considerably smaller for 1930 than at the earlier Census. The importance of this factor in the case of the Building and Contracting Trade, in which the number of these outstanding returns was particularly large, is discussed in the report on that trade.

#### Periods covered by firms' returns

As explained in Note 1 on page xi, firms were given the option of making returns for the calendar year 1930 or for their period of account most closely corresponding thereto, provided that the ending date of that period was not later than 31st March, 1931. The following table shows, for this group of trades as a whole, the total number of returns and the numbers of persons employed according to the periods covered by the returns received.

These particulars relate only to firms in Great Britain, a similar analysis of the returns furnished at the Census of Northern Ireland not being available.

Returns in respect of 12 months ended	Number of returns		Persons employed	
	Number	Per cent. of total	Average number	Per cent. of total
April, 1930 ...	115	1.1	5,528	0.8
May, 1930 ...	82	0.8	3,371	0.5
June, 1930 ...	307	2.8	19,752	3.0
July, 1930 ...	88	0.8	10,074	1.5
August, 1930 ...	88	0.8	4,179	0.6
September, 1930 ...	383	3.5	34,728	5.2
October, 1930 ...	183	1.7	8,470	1.3
November, 1930 ...	128	1.2	7,901	1.2
December, 1930 ...	7,378	68.2	458,602	68.7
January, 1931 ...	233	2.1	14,767	2.2
February, 1931 ...	158	1.5	9,293	1.4
March, 1931 ...	1,671	15.5	90,859	13.6
TOTAL ...	10,814	100.0	667,524	100.0

The mean terminal date of all the returns for 1930 was about the middle of the last week in December, 1930. The following table



gives separate particulars for each trade in the group in respect of returns covering the calendar year 1930:—

Returns covering the twelve months ended December 31st, 1930

Trade	Number of returns		Persons employed	
	Number	Per cent. of total	Average number	Per cent. of total
Brick and Fireclay ...	778	68·8	50,366	69·5
China and Earthenware...	294	74·2	52,753	75·5
Glass ... ..	190	70·1	22,705	57·4
Cement ... ..	60	82·2	9,807	86·2
Building Materials ...	416	68·2	21,360	71·8
Building and Contracting	5,640	67·7	301,611	67·8
TOTAL ... ..	7,378	68·2	458,602	68·7

### Production

**Gross output.**—The value of the gross output (column 2 of the table on page 85) is largely dependent on the value of the materials from which the products are manufactured. Since the principal materials used by the trades in this group (apart from Building and Contracting) are primary products of quarries or mines, the gross output values are somewhat low in relation to those of trades in other groups. As between one year and another the figure for the same trade is influenced by changes in the prices of materials and in manufacturing costs and profits. Further, in certain trades, particularly the Building and Contracting Trade, duplication of goods or services leads to a considerable over-statement of the value of production. For these reasons the gross output figure does not provide a satisfactory representation of the position either of different trades in relation to each other in a given year or of the same trade in different years.

**Net output.**—The net output figure eliminates any over-statement due to the factor of duplication, but its utility as a basis of comparison between different trades in the same year is subject to the reservations mentioned in the Introductory Notes (pages x and xi); moreover, the relationship between the net output reported by a given trade for different years is affected by fluctuations in the various items which the figure comprises, viz., wages and salaries, rent, sales expenses, etc., as well as depreciation and profits. Measurement of production by net output is therefore only a rough guide and the important qualifications to which the results are subject should not be overlooked. In this connection attention is drawn to the estimate made of the relative volume of production in the two years for the group as a whole (see page 89). Net output per head eliminates the variable factor of the numbers of persons employed,

but the use of figures of net output per head for purposes of comparison is, apart from this, subject to the same qualifications as those for net output.

In this group of trades the aggregate net output was greater by 12 per cent. in 1930 than in 1924, owing chiefly to the advance of nearly 17 per cent. in the total shown for the Building and Contracting Trade. Except for the Building Materials Trade, in which net output increased by 30 per cent., none of the remaining trades recorded an increase exceeding 6 per cent.; the only case in which a smaller net output was shown for 1930 was the China and Earthenware Trade, the decrease being 12 per cent.

Net output per person employed in the group was between 3 and 4 per cent. higher in 1930 than in 1924, due to an increase of 23 per cent. in the Cement Trade and of 8 per cent. in the Building and Contracting Trade, the other four trades showing decreases. The Cement Trade recorded considerably the highest net output per head both in 1930 and in 1924, the figures for this trade being respectively 104 per cent. and 72 per cent. higher than the group average, while the smallest figures in both years were those for the China and Earthenware Trade. Net output per employee in England and Wales and Northern Ireland was somewhat higher in 1930 than in 1924, but in Scotland there was a decrease of about 3 per cent. in 1930.

**Volume of production.**—The following table shows, for each principal class of output with which these trades are concerned, the total value recorded for the year 1930 and an estimated revaluation of the total amount returned for similar output in 1924. The estimates given for the first five classes are based, so far as possible, on the average selling values of the products as shown in the returns for 1930, and that for building and kindred work on the movement of the principal costs of production between the two years. These particulars relate only to production in Great Britain.

Kind of output	Total production in Great Britain			1930 as a percentage of 1924
	1930	1924		
	As returned	As returned	At 1930 average values	
	£'000	£'000	£'000	Per cent.
Bricks and fireclay goods ... ..	21,147	21,118	19,327	109
China and earthenware ... ..	13,635	16,187	14,633	93
Glass and glassware ... ..	13,302	12,977	10,976	121
Cement ... ..	8,421	7,716	5,652	149
Building materials ... ..	16,414	11,177	10,300	159
Buildings and other constructional work (including repair work) ...	189,215	157,016	145,000	130
TOTAL ... ..	262,134	226,191	205,888	127



The estimated increase in 1930 in the total volume of output in this group of trades was 27 per cent., an appreciably greater measure of advance than the recorded increase in total net output (12 per cent.). The value of the total output per head of all persons employed in the group averaged £393 in 1930 and the corresponding figure for 1924, calculated at 1930 prices, was £333; an increase of about 18 per cent. is indicated by these figures as compared with the increase of between 3 and 4 per cent. in the net output per employee. It should be borne in mind, however, that these comparisons make no allowance for any variations between the two years in the amount of duplication that may be included in or between the various items, and that the volume of building and constructional output, which forms over 70 per cent. of the group aggregate, cannot be compared with great precision.

### Number of establishments

The following table shows the number of separate establishments covered by the results for 1930, and the total number of returns received for 1930 and 1924. In the case of a firm owning more than one establishment situated in the same Census area and engaged in the same Census trade, a combined return covering all such establishments was usually accepted provided the number of operatives employed at each establishment was shown separately. The number of establishments reported was thus greater than the number of returns received.

The Building and Contracting Trade is omitted from the table, as firms in this trade were not required to state the number of separate establishments owned.

Trade	1930		1924
	Number of establishments	Number of returns	Number of returns
1 Brick and Fireclay ... ..	1,247	1,130	1,274
2 China and Earthenware ... ..	431	396	446
3 Glass ... ..	313	271	263
4 Cement ... ..	80	73	109
5 Building Materials ... ..	750	610	484
TOTAL ... ..	2,821	2,480	2,576

These figures relate only to firms in Great Britain, the number of establishments not being recorded separately in the report on the Census of Production of Northern Ireland.

### Size of firms

In the following table the main particulars recorded at the Census of 1930 for these trades are grouped according to the average numbers of persons shown in the returns. The particulars given in this section relate to firms in Great Britain only.

Size of firm (average numbers employed)	Number of returns	Gross output	Cost of materials and amount paid for work given out	Net output	Average number of persons employed	Net output per person employed
	No.	£'000	£'000	£'000	No.	£
11-24 ... ..	4,483	26,712	12,123	14,589	77,508	188
25-49 ... ..	3,210	40,816	18,981	21,835	110,304	198
50-99 ... ..	1,730	46,449	22,543	23,906	118,555	202
100-199 ... ..	853	47,006	22,955	24,051	118,852	202
200-299 ... ..	266	26,996	13,332	13,664	64,972	210
300-399 ... ..	102	14,207	7,137	7,070	35,190	201
400-499 ... ..	59	9,812	4,774	5,038	25,940	194
500-749 ... ..	60	15,929	8,121	7,808	35,482	220
750-999 ... ..	24	8,248	3,883	4,365	20,879	209
1,000-1,499 ... ..	14	6,037	2,600	3,437	16,533	208
1,500 and over ... ..	13	20,305	8,758	11,547	43,309	267
TOTAL ... ..	10,814	262,517	125,207	137,310	667,524	206

The average number of employees recorded on each return was 62. Establishments at which less than 100 persons were employed accounted for 87 per cent. of the number of returns received but for only 46 per cent. of the total number of employees and 44 per cent. of the total net output. The net output per employee was lowest for establishments in the smallest size group and highest for those in the largest group, but apart from a progressive increase from the smallest establishments to those employing 200 to 299 persons, fluctuations in the net output per head were irregular. The variation from one size-range to another was largely influenced by the Building and Contracting Trade, owing to the important position which this trade occupies in the group, but whereas the general tendency in the Building and Contracting Trade was to show a greater net output per head for the larger establishments, in the group as a whole this tendency was less marked on account of the low net output per head in the larger establishments in the China and Earthenware Trade. Figures for each trade in the group are shown separately in the following table:—



## Net output per person employed

Size of firm (average numbers employed)	Brick and Fireclay	China and Earthen- ware	Glass	Cement	Building Materials	Building and Con- tracting
	£	£	£	£	£	£
11-24 ...	167	199	208	181	222	187
25-49 ...	196	184	176	231	240	196
50-99 ...	191	137	176	355	265	201
100-199 ...	197	143	217	409	268	202
200-299 ...	219	144	208	425	269	210
300-399 ...	170	126	167	439	242	223
400-499 ...	202	126				211
500-749 ...	255	127	193	470	—	221
750-999 ...		132	216	—	—	258
1,000-1,499 ...		127	236	—	—	247
1,500 and over ...	—	—	—	—	—	288
TOTAL ...	202	136	210	418	253	208

## Regional distribution

In the following table the principal aggregates for the clay, building materials and building group as a whole, as recorded at the Censuses of 1930 and 1924, are grouped according to the areas into which the United Kingdom has been sub-divided. As explained in the report on the Building and Contracting Trade (page 181), the allocation of firms in that trade to the various areas does not represent precisely the value, etc., of the work done in those areas. The same qualification applies in a large degree to the table below since the numbers employed in the Building and Contracting Trade account for more than half of the aggregate shown for each area, with the exception of Warwickshire, Worcestershire and Staffordshire.

Area	Number of returns	Gross output	Net output	Average number of persons employed	Net output per person employed
	No.	£'000	£'000	No.	£
1. Greater London ...	1930 2,186 1924 2,120	87,309 61,081	43,002 31,082	171,163 140,052	251 222
2. Lancashire with North Cheshire and the Glossop and New Mills District of Derbyshire ...	1930 1,199 1924 1,501	29,097 28,254	15,237 15,054	71,321 71,828	214 210
3. West Riding of Yorkshire and the City of York ...	1930 735 1924 983	14,240 15,778	7,493 8,221	37,897 42,006	198 196

Area	Number of returns	Gross output	Net output	Average number of persons employed	Net output per person employed
	No.	£'000	£'000	No.	£
4. Northumberland, Durham and the Cleveland District of Yorkshire ...	1930 429 1924 608	7,004 10,440	3,571 5,491	19,312 26,939	185 204
5. Warwickshire, Worcestershire and Staffordshire ...	1930 1,084 1924 1,190	33,826 30,310	18,896 17,247	115,028 101,649	164 170
6. The rest of England (except Monmouth- shire)* ...	1930 3,678 1924 3,950	67,910 58,848	36,750 32,484	185,255 168,685	198 193
7. Glamorganshire, Monmouthshire and Carmarthenshire ...	1930 211 1924 338	3,059 4,776	1,648 2,646	8,375 12,589	197 210
8. The rest of Wales ...	1930 114 1924 156	1,558 1,779	839 1,012	4,899 5,186	171 195
TOTAL—England and Wales* ...	1930 9,636 1924 10,846	244,003 211,266	127,436 113,237	613,250 568,934	208 199
9. Lanarkshire, Renfrew- shire and Dumbar- tonshire ...	1930 480 1924 531	8,744 8,496	4,453 4,442	23,936 23,311	186 191
10. The rest of Scotland...	1930 698 1924 724	9,770 8,590	5,421 4,812	30,338 25,882	179 186
TOTAL—Scotland* ...	1930 1,178 1924 1,255	18,514 17,086	9,874 9,254	54,274 49,193	182 188
TOTAL—Great Britain ...	1930 10,814 1924 12,101	262,517 228,352	137,310 122,491	667,524 618,127	206 198
11. Northern Ireland ...	1930 312 1924 492	3,571 3,273	1,856 1,673	10,799 9,874	172 169
TOTAL—UNITED KINGDOM ...	1930 11,126 1924 12,593	266,088 231,625	139,166 124,164	678,323 628,001	205 198

\* In order to avoid the possible disclosure of information relating to individual firms, particulars of the Cement Trade for Scotland have been included with those for the "rest of England" (Area 6).

Employment in England and Wales increased in 1930 in the three areas in which the largest numbers were employed, and decreased in the five less important areas; in Scotland and in Northern Ireland a rise in the numbers employed occurred. The increase was largest, both absolutely and relatively, in the Greater London area, and for this area the highest net output per employee was recorded in each year.

Of the total number of persons employed in Great Britain, the proportion in England and Wales remained unchanged at 92 per cent.



### Employment

The following table shows the average numbers of male and female operatives and administrative, technical and clerical staff in each of the trades in this group in the two censal years:—

*Average numbers employed in 1930 and 1924 in the several Clay, Building Materials and Building Trades*

Trade		Operatives		Administrative, technical and clerical staff		Total
		Males	Females	Males	Females	
Brick and Fireclay...	1930	64,633	4,308	3,820	560	73,321
	1924	58,273	5,684	3,950	567	68,474
China and Earthenware ...	1930	30,332	34,745	3,594	1,336	70,007
	1924	30,855	33,900	3,566	1,225	69,546
Glass ...	1930	29,379	5,597	3,252	1,343	39,571
	1924	28,692	4,838	2,453	908	36,891
Cement ...	1930	10,190	129	1,050	235	11,604
	1924	12,202	248	856	189	13,495
Building Materials ...	1930	26,296	255	2,912	550	30,013
	1924	18,077	230	1,879	356	20,542
Building and Contracting...	1930	418,429	610	28,222	6,546	453,807
	1924	386,295	714	26,521	5,523	419,053
TOTAL—UNITED KINGDOM	1930	579,259	45,644	42,850	10,570	678,323
	1924	534,394	45,614	39,225	8,768	628,001
England and Wales*	1930	521,611	43,807	38,973	8,859	613,250
	1924	482,895	43,046	35,669	7,324	568,934
Scotland*	1930	47,739	1,800	3,195	1,540	54,274
	1924	42,563	2,519	2,792	1,319	49,193
Northern Ireland ...	1930	9,909	37	682	171	10,799
	1924	8,936	49	764	125	9,874

\* Owing to the possible disclosure of information relating to individual firms, particulars of the Cement Trade for Scotland have been included with those for England and Wales.

With the addition to the figures shown above of the numbers of persons employed by the small firms (see page 86), the average numbers in employment in this group of trades amounted in the aggregate to 847,564 in 1930 and 731,644 in 1924, an increase of nearly 16 per cent. This proportion might, however, be reduced to about 11 per cent. by the inclusion for each year of the employees of the firms that furnished no returns.

**Distribution by status.**—The total number of operatives, as shown in the above table, increased by 44,895 (8 per cent.), and that of administrative, technical and clerical staff by 5,427 (13 per cent.). The increase in the number of operatives employed was considerable in each trade except the China and Earthenware Trade, where the total for each year was substantially the same, and the Cement

Trade, which showed a decrease of 2,131. The exclusion of the persons employed at quarries owned by cement manufacturers (see page 86) accounts for the whole of this apparent decrease. The numbers of administrative, technical and clerical staff were greater in 1930 in each trade except the Brick and Fireclay Trade.

**Distribution by sex.**—The proportion of males to females employed in this group rose slightly from 10·5 to 1 in 1924 to 11·1 to 1 in 1930. Apart, however, from the China and Earthenware Trade, which gave employment to males and females in roughly equal numbers, the trades in this group are primarily concerned in work unsuited to female operative labour. The number of male operatives in the group increased by 44,865, or 8 per cent., but the number of female operatives was practically unchanged in the two years, though there were variations in the numbers employed in the individual trades. As regards the administrative, technical and clerical staff, there was an increase of 3,625 (9 per cent.) in male employees and of 1,802 (21 per cent.) in female employees, the increases being general throughout the group, with the exception of the Brick and Fireclay Trade.

**Distribution by age.**—The following table classifies by age the numbers of persons of each class recorded as employed in the various Clay, Building Materials and Building Trades in the weeks ended 18th October, 1930 and 1924:—

*Numbers of persons employed in the weeks ended 18th October, 1930 and 1924*

Trade		Operatives				Administrative, technical and clerical staff			
		Males		Females		Males		Females	
		Under 18	Total	Under 18	Total	Under 18	Total	Under 18	Total
Brick and Fireclay	1930	8,459	64,172	644	4,279	341	3,820	68	560
	1924	8,043	59,602	1,010	5,741	470	3,950	92	567
China and Earthenware ...	1930	4,177	30,963	9,139	35,474	314	3,594	220	1,336
	1924	3,986	31,497	8,800	34,739	345	3,566	185	1,225
Glass ...	1930	3,421	29,676	1,550	5,653	239	3,252	213	1,343
	1924	4,631	27,553	1,368	4,738	242	2,453	145	908
Cement ...	1930	413	10,385	11	132	87	1,050	30	235
	1924	634	12,217	13	264	54	856	13	189
Building Materials	1930	1,850	26,787	49	260	258	2,912	61	550
	1924	1,254	19,376	52	232	157	1,879	39	356
Building and Contracting ...	1930	25,724	424,647	77	619	1,918	28,222	951	6,546
	1924	29,249	418,461	171	773	1,839	26,521	709	5,523
TOTAL	1930	44,044	586,630	11,470	46,417	3,157	42,850	1,543	10,570
	1924	47,797	568,706	11,414	46,487	3,107	39,225	1,183	8,768



The total number of young persons employed decreased from 63,501 in 1924 to 60,214 in 1930, these figures representing 9.6 per cent. and 8.8 per cent. respectively of all employees. The decrease was chiefly due to a fall in the number of young male operatives in the Building and Contracting Trade, which employed the largest number of young persons in each year, and in the Glass Trade. The largest proportion of young persons, both in 1930 and 1924, was recorded for the China and Earthenware Trade, the proportion being about 19 per cent. in each year.

**Monthly fluctuations in employment.**—Firms were required to state the actual numbers of operatives employed in the middle week of each month of the periods covered by their returns, and the following table shows the monthly aggregates for the clay, building materials and building group:—

*Operative staff in the Clay, Building Materials and Building Trades in 1930 and 1924*

Middle week in	1930		1924
	Total number	Number employed by firms furnishing returns in respect of the twelve months ended December*	Total number
(1)	(2)	(3)	(4)
January ... ..	590,449	400,833	545,667
February ... ..	600,868	408,798	565,844
March ... ..	610,115	416,191	579,183
April ... ..	628,273	428,037	597,584
May ... ..	640,256	434,664	606,692
June ... ..	643,611	437,632	611,060
July ... ..	640,889	434,807	508,251
August ... ..	646,831	438,470	502,471
September ... ..	647,753	440,082	609,949
October ... ..	633,047	428,624	615,193
November ... ..	613,757	415,694	610,684
December ... ..	602,987	398,998	607,514
AVERAGE FOR THE TWELVE MONTHS	624,963	423,569	580,008

\* Great Britain only.

The figures in columns (2) and (4) represent the aggregates recorded in all returns, irrespective of the periods to which they related\*; thus, for example, in the case of returns covering the twelve months ended 31st March, 1931, the figures recorded in column (2) for the first three months were the numbers employed in that period of the year 1931, while the numbers at work in the

\* See Introductory Notes, page xi.

last three months of 1929 were stated in returns covering the twelve months ended 30th September, 1930. A more accurate representation of the fluctuations in employment in the year 1930 is provided by the figures in column (3), which show the numbers recorded in returns that related to the calendar year.

With the exception of a falling-off in July to the May level, the numbers employed in 1930 by firms making returns for the calendar year increased from month to month up to September. In the last three months of the year there was a sharp decline, the figure for December being less than that for January. The highest figure recorded (September) was 4 per cent. above the average for the year while the lowest (December) was 6 per cent. below the average. If allowance be made for the fact that there was a partial stoppage of work in the Building and Contracting Trade in July and August, 1924, the figures for that year show very much the same trend as those for 1930, though the decline in the last quarter of 1924 was much less marked than in 1930.

### Wages

The table on pages 98 and 99 summarises the information available as to the amount of wages paid by firms in these trades in 1930 and 1924. The particulars of wages shown in column (8) are those ascertained by the Ministry of Labour as a result of the voluntary inquiries undertaken by that Ministry into wages and hours of labour in the United Kingdom. Owing, however, to various causes, including the fact that certain firms owning several establishments made combined returns to one Department and separate returns to the other, it was not found practicable to secure comparable particulars in respect of all firms that furnished particulars of wages to the Ministry of Labour.

The numbers of operatives shown in columns (1) and (3) are those returned to the Census of Production as employed by the firms concerned in the weeks ended 18th October, 1930 and 1924, and the average during the year 1930 respectively. The amount of wages paid shown in column (8) was the aggregate returned to the Ministry of Labour in respect of the same firms. The proportion of each trade represented by the firms that furnished particulars of their wage bills is shown in columns (2) and (4) based on the numbers of operatives employed and, in column (7), on net output. The average numbers of operatives employed during the year 1924, corresponding to those given in column (3) in respect of 1930, are not available.

The figures for wages for both years relate to firms employing on an average more than ten persons during the respective years and cover firms in Great Britain only.



Trade	Firms furnishing				
	Operative staff employed				
	During week ended 18th October (1)	Proportion of trade (2)	Average during year (3)	Proportion of trade (4)	
	No.	Per cent.	No.	Per cent.	
Brick and Fireclay...	1930	45,506	67.3	45,639	67.0
	1924	37,896	58.7	*	—
China and Earthenware	1930	48,172	72.6	47,144	72.6
	1924	36,984	55.9	*	—
Glass	1930	24,595	69.6	23,784	68.0
	1924	25,551	79.2	*	—
Cement	1930	7,558	73.3	7,384	73.0
	1924	8,469	69.0	*	—
Building Materials	1930	13,662	50.9	13,342	50.7
	1924	5,079	26.2	*	—
Building and Contracting...	1930	249,203	59.8	246,284	60.0
	1924	165,121	40.2	*	—
TOTAL ...	1930	388,696	62.4	383,577	62.4
	1924	279,100	46.1	*	—

Gross output	returns of wages				Trade
	Net output		Wages paid		
	Amount	Proportion of trade	Amount	Proportion of net output	
(5)	(6)	(7)	(8)	(9)	
£'000	£'000	Per cent.	£'000	Per cent.	
14,262	10,166	69.3	5,973	58.8	1930 } Brick and Fireclay.
*	8,374	59.2	4,666	55.7	
10,436	6,888	72.3	4,235	61.5	1930 } China and Earthen-ware.
*	5,546	51.1	3,326	60.0	
9,677	5,932	71.5	3,164	53.3	1930 } Glass.
*	6,498	81.3	3,460	53.2	
6,076	3,676	77.3	1,204	32.8	1930 } Cement.
*	3,229	71.2	1,290	40.0	
6,950	3,878	51.6	2,068	53.3	1930 } Building Materials.
*	1,575	27.3	677	43.0	
112,992	54,220	58.6	38,135	70.3	1930 } Building and Con-tracting.
*	30,854	39.0	23,409	75.9	
160,393	84,760	61.7	54,779	64.6	1930 } ... TOTAL.
*	56,076	45.8	36,828	65.7	

\* Not available.



The sample for which wages data are available for 1930 was reasonably representative of each trade, the proportion covered on the basis of employment being lower than 60 per cent. in only one case (Building Materials). For 1924 the figures available are less complete, particularly in the case of the Building Materials Trade, in which the sample covered little more than one-fourth of the total, and the Building and Contracting Trade. The table shows a considerable variation in the importance of the wages bill as a factor in net output (column 9), the high proportion of 70 per cent. shown for 1930 for the Building and Contracting Trade contrasting with that of about one-third in the Cement Trade.

Taking the group as a whole the average wages paid per operative in 1930 were £143. The figures for the individual trades ranged from £163 in the Cement Trade to £90 in the China and Earthenware Trade; in the Building and Contracting Trade the average was £155 per operative. Averages for 1924 can only be estimated approximately owing both to the inadequacy of the sample, and to the fact that the yearly average numbers of the operatives covered by the wages returns are not available. If it is assumed that the number of persons shown in the table as employed in October, 1924, diverged from the yearly average to the same extent as for all firms, the average wages paid per operative in this group amounted in 1924 to £140, the figure for the Building and Contracting Trade being £154 and for the other trades, taken together, £121.

### Power

The particulars recorded at the Censuses of 1930 and 1924 in respect of power installed and employed in this group of trades are shown in the following table:—

*Power ordinarily in use and not in use in the Clay, Building Materials and Building Trades in 1930 and 1924*

Type	Capacity ordinarily in use		Capacity in reserve or idle		Proportion in reserve or idle	
	1930	1924	1930	1924	1930	1924
	Th. H.P.	Th. H.P.	Th. H.P.	Th. H.P.	Per cent.	Per cent.
<b>PRIME MOVERS</b>						
Reciprocating steam engines	168.1	197.4	23.5	19.0	12.3	8.8
Steam turbines ...	64.6	43.3	28.1	17.6	30.4	29.0
Internal combustion engines:—						
Gas ...	40.8	67.9	7.2	7.9	15.1	10.4
Petrol, kerosene, or other light oils ...	38.4	20.1	5.8	2.2	13.2	9.7
Heavy oils ...	31.4	10.3	6.9	2.1	17.9	16.5
Water engines ...	1.4	1.5	0.1	*	3.9	0.9
Other ...	0.2	—	0.1	—	41.0	—
<b>TOTAL—Prime movers</b>	<b>344.9</b>	<b>340.5</b>	<b>71.7</b>	<b>48.8</b>	<b>17.2</b>	<b>12.5</b>

Type	Capacity ordinarily in use		Capacity in reserve or idle		Proportion in reserve or idle	
	1930	1924	1930	1924	1930	1924
	Th. Kw.	Th. Kw.	Th. Kw.	Th. Kw.	Per cent.	Per cent.
<b>ELECTRIC GENERATORS</b>						
Driven by						
Reciprocating steam engines ...	17.7	17.7	4.9	3.9	21.8	18.1
Steam turbines ...	46.6	30.9	20.2	12.5	30.2	28.9
Internal combustion engines:—						
Gas ...	5.1	8.2	2.7	1.7	34.3	16.6
Petrol, kerosene, or other light oils ...	0.9	0.4	0.2	0.1	19.7	15.4
Heavy oils ...	5.6	2.9	3.7	1.3	39.5	30.0
Water engines ...	0.2	0.1	—	*	—	24.4
<b>TOTAL—Electric generators</b>	<b>76.1</b>	<b>60.2</b>	<b>31.7</b>	<b>19.5</b>	<b>29.4</b>	<b>24.4</b>
	Th. H.P.	Th. H.P.	Th. H.P.	Th. H.P.		
<b>ELECTRIC MOTORS</b>						
Driven by						
Electricity generated in same works ...	115.9	93.4	12.3	10.8	9.6	10.4
Electricity generated in other works under same ownership ...	12.8	3.8	1.3	0.2	9.2	3.3
Purchased electricity	340.6	169.3	41.8	21.3	10.9	11.2
<b>TOTAL—Electric motors</b>	<b>469.3</b>	<b>266.5</b>	<b>55.4</b>	<b>32.3</b>	<b>10.6</b>	<b>10.8</b>

\* Less than 50 H.P. or Kw.

The power generated by prime movers is required partly for direct application and partly for driving generators for the production of electrical energy. The electrical energy so produced may be used either for the purpose of driving electric motors or for heating, lighting and process purposes. Particulars of the power applied mechanically (i.e., directly) and electrically are given in the table on page 103.

There was a slight increase in the total capacity of prime movers in use in 1930 as compared with 1924, the decrease in reciprocating steam engines and gas engines being rather more than made up by the increase in steam turbines and internal combustion engines other than those driven by gas. Electric generators in use showed an increase in total capacity of 27 per cent. While prime movers represented the chief source of power in 1924, electric motors driven by purchased electricity took their place in 1930, the capacity of such motors in use having doubled between 1924 and 1930. The capacity of all electric motors in use was 76 per cent. greater in 1930 than in 1924.



At the 1930 Census, firms were definitely informed that obsolete engines should not be recorded in their returns, and as no similar instruction was given at the previous Census, the figures for reserve or idle plant in the two years may not be precisely comparable. In any case, however, the proportion of reserve or idle plant does not furnish a reliable measure of the activity of trade, since all engines that were in operation during the greater part of the period in which production was carried on were recorded as "ordinarily in use", irrespective of intermittent working.

The particulars furnished at the two Censuses by each of the trades included in this group in respect of prime movers, electric generators and electric motors installed, are shown in the following table:—

Power available in 1930 and 1924

Trade	Prime movers	Electric generators	Electric motors				All electric motors
			Driven by electricity			Purchased	
			Generated in same works	Generated in other works under same ownership			
Th. H.P.	Th. Kw.	Th. H.P.	Th. H.P.	Th. H.P.	Th.H.P.		
Brick and Fireclay	1930	139.4	15.5	15.3	9.7	62.0	87.0
	1924	128.6	7.0	8.1	3.3	31.1	42.5
China and Earthenware ...	1930	30.3	5.6	3.8	0.4	18.6	22.8
	1924	33.0	4.3	2.9	—	11.2	14.1
Glass ...	1930	34.7	22.1	49.1	—	36.4	85.5
	1924	27.5	17.2	34.9	—	21.1	56.0
Cement ...	1930	89.7	57.9	52.8	0.8	105.5	159.1
	1924	94.9	46.1	51.6	0.5	21.6	73.7
Building Materials	1930	25.0	3.1	2.8	2.8	34.1	39.7
	1924	16.0	1.0	1.1	0.2	18.0	19.3
Building and Contracting ...	1930	97.5	3.6	4.4	0.4	125.8	130.6
	1924	89.3	4.1	5.6	—	87.6	93.2
TOTAL—UNITED KINGDOM ...	1930	416.6	107.8	128.2	14.1	382.4	524.7
	1924	389.3	79.7	104.2	4.0	190.6	298.8
England and Wales*	1930	377.8	102.0	120.6	11.5	347.6	479.7
	1924	357.0	75.9	98.6	2.5	171.5	272.6
Scotland*	1930	28.5	2.9	3.0	2.6	32.1	37.7
	1924	24.7	1.2	1.4	1.5	18.1	21.0
Northern Ireland...	1930	10.3	2.9	4.6	—	2.7	7.3
	1924	7.6	2.6	4.2	—	1.0	5.2

\* Owing to the possible disclosure of information relating to individual firms, particulars of the Cement Trade for Scotland have been included with those for England and Wales.

**Total power in use.**—The figures in the following table represent the estimated amount of power actually employed by each of the trades in this group in the two years. For the purpose of arriving at the power applied mechanically, the capacity of the prime movers required to drive electric generators has been calculated and deducted from the total capacity of the prime movers; the power applied electrically represents the capacity of electric motors driven by generators at firms' works added to that of motors driven by purchased electricity. As the basis for calculating the amount of the primary power that is converted into electrical energy, 746 kilowatts of electrical energy have been taken as equivalent to 1,000 horse-power of primary power and an average loss of ten per cent. in transmission has been allowed except for steam turbines, in which the loss is negligible. The power capacity recorded as "ordinarily in use" has been taken as the basis of the calculation in all cases.

The horse-power of motors designed to be driven by electricity generated in the same works may be greater than that of the prime movers used (or calculated in this manner to have been necessary) to drive them, since machines required for special processes are frequently equipped with individual motors which will only be in use on those occasions when the need for those processes arises. Further, the capacity measurement which firms were instructed to state was the effective horse-power which their engines could develop and this measurement does not necessarily represent the capacity at which the engines were normally operated. For these reasons, the figures given below should not be taken as providing more than a rough indication of the actual amount of power employed by any trade or of the degree of its electrification.

Power in use in 1930 and 1924

Trade	Power applied mechanically	Power applied electrically	Total power	Per head of average number of operatives employed	
	Th. H.P.	Th. H.P.	Th. H.P.	H.P.	
Brick and Fireclay ...	1930	110.4	80.6	191.0	2.77
	1924	112.2	39.0	151.2	2.36
China and Earthenware...	1930	21.5	21.0	42.5	0.65
	1924	25.0	12.9	37.9	0.59
Glass ...	1930	3.9	74.9	78.8	2.25
	1924	3.2	48.9	52.1	1.55
Cement ...	1930	8.6	146.6	155.2	15.05
	1924	28.4	65.2	93.6	7.52
Building Materials	1930	17.5	34.9	52.4	1.98
	1924	13.0	17.3	30.3	1.66
Building and Contracting	1930	76.6	111.3	187.9	0.45
	1924	73.5	83.2	156.7	0.40
TOTAL ...	1930	238.5	469.3	707.8	1.13
	1924	255.3	266.5	521.8	0.90



The above table shows that this group of trades followed the general tendency of industry towards the employment of electricity to meet additional power requirements. The power applied electrically increased by 76 per cent., while the proportion of the total power that was so applied was 51 per cent. in 1924 and 66 per cent. in 1930. The power per operative employed increased throughout the group, the increase in the Cement Trade being particularly striking; for the group as a whole the 1930 figure was 26 per cent. greater than that for 1924.

#### Consumption of fuel

**Coal and coke.**—At the 1930 Census, all firms were required to state the total quantity of coal and coke used for generating power (i.e., for driving engines), and were also requested to furnish particulars of the amounts used for other purposes on a voluntary basis, as the provisions of the Census of Production Act do not enable the latter to be obtained compulsorily. In the Clay, Building Materials and Building Trades, where heat is required for process purposes as well as for power, many firms found difficulty in furnishing a trustworthy figure of the quantities used for these two categories separately, and, as appears from the table below, it was necessary to accept a certain number of inclusive quantity statements without distinction as to purpose. The following particulars relate only to firms in Great Britain.

#### Coal and coke used

*Note.*—The figures in italics below the name of the trade represent respectively (1) the percentage of the total capacity of steam engines in use represented by the firms that furnished separate particulars of coal and coke used for power, and (2) the percentage of the total net output represented by the firms that furnished separate particulars of coal and coke used for other purposes.

Trade	For power		For other purposes		Unclassified	
	Coal	Coke	Coal	Coke	Coal	Coke
	Th. tons	Th. tons	Th. tons	Th. tons	Th. tons	Th. tons
Brick and Fireclay— (1) <i>99.0</i> ; (2) <i>84.6</i> ...	906.4	11.3	2,061.2	23.1	29.8	0.2
China and Earthenware— (1) <i>99.4</i> ; (2) <i>85.3</i> ...	275.7	1.8	708.1	41.8	1.7	—
Glass— (1) <i>99.9</i> ; (2) <i>72.3</i> ...	107.8	2.2	406.3	23.9	6.5	0.8
Cement— (1) <i>99.8</i> ; (2) <i>92.7</i> ...	198.2	1.4	1,423.1	32.5	1.4	—
Building Materials— (1) <i>92.4</i> ; (2) <i>92.5</i> ...	25.1	5.1	42.8	28.5	7.0	*
Building and Contracting— (1) <i>98.6</i> ; (2) <i>93.4</i> ...	95.9	6.0	29.2	24.8	0.5	0.6
TOTAL— (1) <i>99.1</i> ; (2) <i>95.0</i> ...	1,609.1	27.8	4,670.7	174.6	46.9	1.6

\* Less than 50 tons.

On the basis of the particulars received, it may be estimated that the total consumption for power purposes in 1930 was about 1,625,000 tons of coal and 28,000 tons of coke.

No particulars of oil, gas or other fuel used were ascertained for the year 1930. At the Census of 1924, a voluntary inquiry was made as to the amounts of coal, coke, heavy and light oils, and gas consumed, and reference should be made to the Final Report on that Census for particulars of the partial information reported by each of the Clay, Building Materials and Building Trades.

**Electricity.**—Particulars of the quantity of electricity used were required from all firms, electricity produced by their own generating plant being distinguished from that purchased from outside sources. No separate record of the purpose for which the current was used was obtained.

The following table shows for each of the trades in this group the total quantities of electricity used in 1930 :—

#### Electricity used

Trade	Electricity purchased	Electricity generated		Number of units generated per kilowatt of generators in use
		In same works	In other works owned by the firm	
	B.T.U. (Kw.-hrs.) '000	B.T.U. (Kw.-hrs.) '000	B.T.U. (Kw.-hrs.) '000	B.T.U. per Kw.
Brick and Fireclay ... ..	68,793	24,878	13,095	1,921
China and Earthenware... ..	18,565	4,989	619	1,240
Glass ... ..	69,243	67,904	—	4,631
Cement ... ..	282,449	114,874	1,139	3,079
Building Materials ... ..	17,519	2,065	4,000	948
Building and Contracting ... ..	39,246	1,830	145	843
TOTAL ... ..	495,815	216,540	18,998	2,955

The figures shown for current generated represent only the amounts generated *and used*, and fall short of the total output of current in cases where electricity was sold to outside consumers.